

REMARKS

As can be appreciated the technical field of cathode ray tubes is relatively crowded and technological advances that provide improvements while reducing manufacturing costs, can be a significant accomplishment. The present invention provides a cathode ray tube (CRT) apparatus that is simple in structure but effectively improves velocity modulation sensitivity.

In the present invention, our velocity modulation coils can be positioned on diametrically opposite sides of a neck portion of the CRT. These coils will conform to the shape of the outer circumference of the neck portion so that their exterior surfaces have a convex configuration. As noted on Page 9, Lines 8-12, a magnetic member is inserted over the neck portion of the CRT so that the velocity modulation coil is then positioned between an inner surface of the magnetic member and an outer surface of the CRT neck portion. This position of the magnetic member can increase the density of magnetic flux which can affect electronic beams within the neck portion of the CRT. Reference can be made specifically to the magnetic flux shown in Figure 4b, which discloses an improvement over conventional configurations.

On Page 10, Lines 12-19, the following advantages are achieved with our present invention:

Moreover, since the magnetic ring 50 is arranged at a position corresponding to the space between the electrodes (the G5B electrode and the G6 electrode) constituting the electron gun 24, influence of the eddy current loss in the electrodes is minimized as much as possible. In addition, the above arrangement also serves to extend the magnetic field. Consequently, the velocity modulation sensitivity can be effectively improved.

Additionally, by providing the proximity positioning of a magnetic member relative to both velocity modulation coils and the main lens or focusing electrodes which converge each of

the electron beams onto the phosphor screen, we are able to achieve, at a relatively economical cost, improvements as follows:

As seen from (c) in Figure 5, by the presence of the magnetic ring 50, the magnetic flux density at the space between the G5B and G6 electrodes approximately doubles. It is also apparent that the magnetic field extends toward the screen side of the electron gun. Consequently, the velocity modulation sensitivity improves to a greater extent than conventionally achieved.

Page 11, Lines 7-13.

Thus, by providing a magnetic member to cover a position corresponding to a space between the two adjacent electrodes, the magnetic member serves to increase the magnetic flux density in the electron beam passing area and a cooperative improvement is realized in correlation with the velocity modulation coil. As can be appreciated, the magnetic member can take numerous different shapes other than a ring, as set forth in our specification.

The Office Action relied upon the *Hirota et al* (U.S. Patent No. 6,750,602) to anticipate Claims 1, 3, 4, 7, 11 and 12 under 35 U.S.C. §102.

The *Hirota et al* reference is directed to a projection-type cathode ray tube of a special configuration having a neck composed of different diameter portions. An application of this invention can be seen schematically in Figure 10 as a rear projection cathode ray tube system. Purportedly, this invention was to balance the amount of deflection power consumption while improving focusing characteristics wherein a deflection yoke mounting portion of the CRT which was smaller than a portion of the CRT that would house the electron gun.

Referring to Figure 1, the larger diameter portion or neck 32 housed the electron lenses or focus electrodes which are disclosed in a split arrangement as element 642 and 641 in Figure 1.

Thus, these focus electrodes and a final anode electrode can be significantly increased in diameter in this arrangement. See, for example, Column 5, Lines 23-34.

Of particular importance is the teaching of a relationship of the velocity modulation coil and the centering magnets 10 and 11, cited in formulating the Office Action rejection. This teaching can be found in Column 7, Lines 7-9 as follows:

The PRT is provided with a convergence yoke 8, a velocity modulation coil 9, centering magnets 10, 11 in the order from the deflection yoke 7 toward the base 4.

As can be appreciated, the Office Action cited the magnetic member 11, which is positioned immediately downstream of a clamping member 12. The velocity modulation coil 9, however, is positioned further downstream than the cited magnetic member 11.

The purpose of the velocity modulation coil in the *Hirota et al* reference is as follows (Column 8, Lines 1-8):

To improve the sensitivity of the velocity modulation coil 9, the focus electrode 64 is divided into the first member of the focus electrode 641 and the second member 642 of the focus electrode, thereby to form a gap therebetween, and consequently, the magnetic field generated by the velocity modulation coil 9 is effectively exerted on the electron beam.

Thus, it is amply clear that the *Hirota et al* reference is not recognizing the same problem, nor positioning the velocity modulation coil, focus electrodes and magnetic ring in the same manner as set forth in our current claims.

Our invention not only reduces the number of manufacturing steps and lowers the manufacturing costs, but further increases the magnetic field without increasing the amount of current flowing through the velocity modulation coil. Problems of eddy currents are lessened and as can be seen in Figure 2, our magnetic ring is mounted to surround or extend substantially

over our respective velocity modulation coils 18A and 18B (see Fig. A also) with the advantages shown graphically in Figure 4B and Figure 5C.

In summary, the *Hirota et al* reference is not attempting to resolve the same problem in the same manner as set forth in our present invention and does not teach the spatial relationships set forth in our current claims.

Thus when differences that may appear technologically minor nonetheless have a practical impact, particularly in a crowded field, the decision-maker must consider the obviousness of the new structure in this light.

Continental Can Co. USA Inc. v. Monsanto Co., 20 USPQ 2d. 1746, 1752 (Fed. Cir. 1991).

The Office Action relied upon secondary references such as the *Tsukii et al* (U.S. Patent No. 5,028,898) to supplement the *Hirota et al* disclosure. Thus, Claims 2-8 are rejected over a combination of *Hirota et al* in view of the *Tsukii et al* disclosure.

The *Tsukii et al* reference represents another attempt to provide improvements in a conventional cathode ray tube by fixing a plurality of pole pieces on a ring-shaped holder and fixing the pole holder around an outer diameter section of CRT neck. Adjustment of the static convergency and purity is performed by using a plurality of independent pole pieces.

In this environment, the Office Action cited a readjusting magnetic ring 12 as shown in the embodiments of Figures 8-13. The particular mounting arrangement with spacers 13A and 13B permits the locking ring 11 and the magnetic ring 12 to be freely rotatable. This reference does not teach, however, a relationship of the velocity modulation coils and the magnetic member, nor a relationship of the velocity modulation coils, magnetic member and focusing electrodes. Since neither of these references suggest the features of our claims, it is respectfully submitted that only the present application provides a teaching under 35 U.S.C. §103.

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.

Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143 (Fed. Cir. 1985).

Claims 5 and 9 were rejected as obvious over a combination of the *Hirota et al* reference in view of the *Tanaka* (U.S. Patent No. 4,621,215). Basically, *Tanaka* was cited to teach an annular magnetic core of a particular composition. It does not, however, address the deficiencies of the *Hirota et al* disclosure.

Finally, Claims 6 and 10 were rejected over a combination of the *Hirota et al* in view of the *Hishiki et al* (U.S. Patent No. 6,046,538). Again, the Office Action was relying upon the *Hishiki et al* reference to teach a ferrite magnetic powder molded into a pre-determined shape. This teaching, however, does not rectify the lack of teaching of the *Hirota et al* reference.

In view of the above comments, it is believed that the present application is now in condition for allowance, and an early notification of the same is requested. If the Examiner believes a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed phone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 14, 2005.

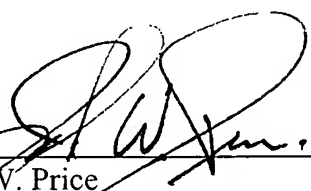
Very truly yours,

SNELL & WILMER L.L.P.

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Signature

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